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PATENT ABSTRACTS OF JAPAN

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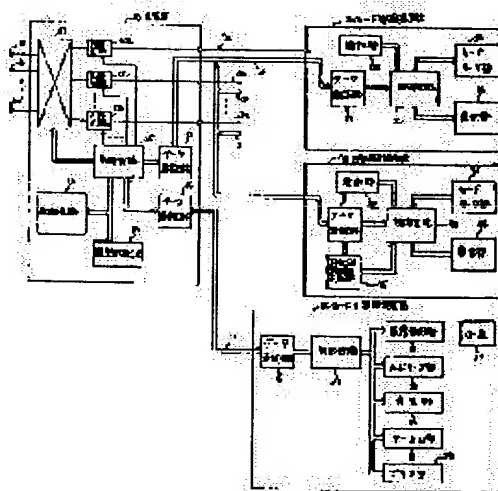
(72)Inventor : FUMEI FUMEI

(54) CARD TYPE FARE CONTROL SYSTEM

(57)Abstract:

PURPOSE: To attain the adjustment the overs/shorts of an estimate in a card type fare control system applying a prepaid system by storing the card estimate in a main device in accordance with each card and then controlling the propriety of application of a terminal equipment based on the estimate balance information when the ID code of the card is read.

CONSTITUTION: The terminals 20 and 40 consisting of a card telephone set, a vending machine, etc., are provided together with a card estimate setting device 30, and a main device 10 which contains these terminals 20 and 40 and the device 30 connected to each other via the data communication lines 3 and 4. Then the card estimate is stored in a storage circuit 15 of a main device 10 via the device 30 and in response to each card. The device 10 controls the propriety of application of both terminals 20 and 40 when the ID codes received from these terminals are read.



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CLAIMS

[Claim(s)]

[Claim 1] A card budget setting device and the tariff management equipment connected with this card budget setting device by the data communication line, It consists of terminal units connected with this tariff management equipment by the data communication line. To the above-mentioned budget setting device A means to transmit the ID code of the tariff information corresponding to a card and its card to tariff management equipment through the above-mentioned data communication line is established. A storage means is formed in the above-mentioned tariff management equipment, and the ID code transmitted from the above-mentioned budget setting device and the tariff information corresponding to this ID code are memorized. To a terminal unit A means to transmit the information for subtracting the tariff information recorded on a reading means to read the ID code recorded on the card, and an ID code and the above-mentioned tariff management equipment, A display means to display the above-mentioned tariff information etc. is established. Tariff management equipment The card system tariff managerial system characterized by controlling the activity of a terminal unit improper according to the storage information corresponding to this ID code by which subtraction was carried out [above-mentioned] when the tariff information in which storage is carried out [above-mentioned] by the above-mentioned subtraction information is subtracted and memorized and an ID code is transmitted from the above-mentioned terminal unit

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the card system tariff managerial system by the prepaid method.

[0002]

[Description of the Prior Art] The telephone card has spread widely as an object for coin box sets as a management method of the tariff using a card. As for the prepaid method by this telephone card, tariff information is written in the card itself. namely, a card -- the read of tariff information and the means which can do writing are formed in the available coin box set, and when the tariff information currently written in the inserted card is read, that tariff information is subtracted according to duration of a call (frequency) and a call is completed with this read / write-in means at the time of an activity, he is trying to write the remaining tariff information in a card again

[0003]

[Problem(s) to be Solved by the Invention] By the way, not only phonecall charges but various kinds of automatic vending machines etc. are made to share the tariff management by such prepaid method, for example, there is want of enabling it to want to be able to use in a hotel and an apartment. When it is going to apply the above-mentioned prepaid method to the system for meeting such want, there are the following problems.

That is, in order to have to write again the ***** information which subtracted the tariff which read the tariff information memorized by (1) card, and was used from the read tariff information in a card, reading / write-in function must be given to all the telephones of the terminal using a card, and automatic vending machines, and it will become expensive while terminal telephone and an automatic vending machine become complicated.

(2) It will be used improperly by forgery of a card etc., if it is come to hand by the terminal unit and reading / write-in method of the card which is the core are analyzed, since it has tariff information in the card itself and is the same property as a gold note. For this reason, telephone and an automatic vending machine must carry out a security function to the configuration fully taken into consideration, and cause a cost rise.

(3) A call will be interrupted if ***** becomes zero. (4) When a user loses a card, it loses simultaneously and tariff information does not have a relief means against a user, either. This invention tends to offer the card system tariff managerial system by the prepaid method which solved the above-mentioned trouble.

[0004]

[Means for Solving the Problem] This invention is a card budget setting device and tariff management equipment connected with this card budget setting device by the data communication line. It consists of terminal units connected with this tariff management equipment by the data communication line. To the above-mentioned budget setting device A means to transmit the ID code of the tariff information corresponding to a card and its card to tariff management equipment through the above-mentioned data communication line is established. A storage means is formed in the above-mentioned tariff management equipment,

and the ID code transmitted from the above-mentioned budget setting device and the tariff information corresponding to this ID code are memorized. To a terminal unit A means to transmit the information for subtracting the tariff information recorded on a reading means to read the ID code recorded on the card, and an ID code and the above-mentioned tariff management equipment, It is the card system tariff managerial system characterized by establishing a display means, and for tariff management equipment subtracting the tariff information in which storage is carried out [above-mentioned] by the above-mentioned subtraction information, and controlling the above-mentioned terminal unit according to a subtraction result.

[0005]

[work ---] for At the time of budget setting out, the ID code corresponding to a card and budget amount-of-money information are transmitted to tariff management equipment from a budget setting device, it is matched with the storage means in tariff management equipment by the above-mentioned ID code and the ID code, and budget tariff information is memorized. At the time of the activity of terminal units, such as a card dialer and a card system automatic vending machine, according to an ID code and the utilization situation of this terminal unit, the subtraction information on a tariff is transmitted to tariff management equipment from a terminal unit, and the budget balance is subtracted. This activity of a terminal unit is performed the degree of capital. Since a terminal unit is controlled according to a subtraction result, actuation of a terminal unit is not promptly interrupted for zero for the balance (a call is interrupted). Since it is not necessary to write tariff information in a card, it is not necessary to prepare the writer section in a terminal unit. Moreover, since it is possible to read budget tariff information from a storage means by keeping the ID code of a card in mind using this ID card, relief of the card user in the case of card loss can be performed.

[0006]

[Example] Hereafter, I will explain the tariff managerial system by this invention, referring to drawing of an example. The card with which the ID code for discernment was written for example, in the magnetic target is used for this example. And utilization by the card is enabled by paying a tariff in advance beforehand, and carrying out budget setting out corresponding to that ID code, using this card, and using this card at the terminal of card telephone or an automatic vending machine. Drawing 1 shows one example which constituted this tariff managerial system in a key telephone set and one, and, for 10, as for a card telephone terminal and 40, the main unit and 20 are [an automatic-vending-machine terminal and 30] card budget setting devices. Two or more card telephone terminals 20 and automatic-vending-machine terminals 40 are connectable to the main unit 10. However, the call line mentioned later is not connected to the automatic-vending-machine terminal 40. The main unit 10 has a main wire circuit and the exchange section 11, the extension circuits 12a-12n of the number according to the number of the card telephone terminals 20, i.e., the number of extensions, data telecommunication lines 13 and 14, the store circuit 15, the accounting management circuit 16, and the control circuit 17 that controls these and that is equipped with a mass clo computer (Following CPU is called), for example. Moreover, the card telephone terminal 20 has the transmission-and-reception talk circuit which is not illustrated, the TETA communication circuit 21, a control unit 22, the card reader section 23, the display 24, and the control circuit 25 equipped with CPU which controls these. The automatic-vending-machine terminal 40 has the data communication circuit 41, a control unit 42, the card reader section 43 and a display 44, the tariff subtraction information-sending section 45, and the control circuit 46 equipped with CPU which controls these. The card budget setting device 30 has the data communication circuit 31, the bill discernment section 32, the card reader section 33, a display 34, the key input section 35, the printer 36, and the control circuit 37 equipped with CPU which controls these. The main unit 10 is connected with the telephone lines 1a-1m for 1 - a multiple-line, and these telephone lines 1a-1m are connected to a main wire circuit and the exchange section 11. Moreover, two or more extension call lines 2a-2n are connected to the main unit 10, and the extension circuits 12a-12n are connected between each, the main wire circuits, and the exchange sections 11 which are these extension call lines 2a-2n. And extension call lines [2a-2n] each is connected to the transmission-and-reception talk circuit of the card telephone terminal 20. The data communication circuit 13 of

the main unit 10 is connected to each data communication circuit 21 and 41 of two or more card telephone terminals 20 and the automatic-vending-machine terminal 40 through the extension data bus 3. The data communication circuit 14 of the main unit 10 is connected to the data communication circuit 31 of the card budget setting device 30 through the data communication line 4. In the main unit 10, a main wire circuit and the exchange section 11 make connection (line wire call by main wire connection) between the telephone line and an extension call line, connection (extension call) of an extension call line comrade, etc. according to control of a control circuit 17. Extension circuits [12a-12n] each performs a call current supply source according to control of a control circuit 14. In the store circuit 15, as shown in drawing 2, ID code area and tariff information area are set up, the ID code currently written in the card is written in ID code area, and budget tariff information is written in tariff information area corresponding to the ID code, respectively. About the writing to this store circuit 15, it mentions later. The accounting management circuit 16 has the tariff map on which the hour entry of one frequency which is the unit of phonecall charges is memorized according to the local office number and the street code, and is made to perform accounting management using a tariff map based on the control from a control circuit 17 at the time of a call. The tariff [management / of the automatic-vending-machine terminal 40 / utilization tariff] (for example, tariff computed from the number and unit price of an article which carried out the automatic sale) according to the utilization situation of the automatic-vending-machine terminal 40 is sent out to the main unit 10 from the tariff subtraction information-sending section 45, and tariff management is performed. Next, actuation is explained below. In the case of this example, the card with which a different ID code was written in, respectively is prepared. And this card is distributed to an individual's user. A user registers the ID code for utilization of the card telephone terminal 20 and the automatic-vending-machine terminal 40 first using this card. This register operation procedure and actuation of each equipment are explained referring to flow CHACHITO of drawing 3. In the case of this example, a register mode setting-out means for one in two or more card telephone terminals 20 to perform this registration actuation is formed in a control unit 22. First, a telephone user or an exclusive operator operates a register mode setting-out means at the card telephone terminal 20 with this register mode setting-out means, and makes it ID code register mode (drawing 3, 101). Then, the card telephone terminal 20 transmits mode setting information to the main unit 10 through a data bus 3 from the data communication circuit 21 (**, 102). The main unit 10 is the data communication circuit 13, receives this mode setting information (**, 103), and makes the mode of the main unit 10 the register mode of an ID code (**, 104). And the main unit 10 sends the acknowledgement message of having become register mode to the card telephone terminal 20 through a data bus 3 (**, 105). The card telephone terminal 20 receives this (**, 106), and displays a card insertion message, such as "please insert a card", on a display 24. Then, a telephone user or an operator inserts a card. And if card insertion is checked at the card telephone terminal 20 (**, 107), the card telephone terminal 20 will read the ID code written in the card by the card reader section 23 (**, 108), and will transmit the read ID code to the main unit 10 through a data bus 3 (**, 109). The main unit 10 receives this ID code (**, 110), and writes that ID code in a store circuit 15 (**, 111). In this case, as shown in drawing 2, an ID code is written in ID code area among memory areas. At this time, the content of storage of tariff information area is 0 yen. In this way, if registration of an ID code is completed, the main unit 10 will transmit a registration completion message to the card telephone terminal 20 through a data bus 3 (**, 112). The card telephone terminal 20 receives this message (**, 113). and — if it is [whether it registers by other telephone users continuing, and] ** about a means (**, 114) — the ** sake 24, for example, a display, — " — in registering continuously, please insert a card. In registration termination, please end register mode. Messages, such as " — , are displayed. And since a card is inserted when performing repeat registration, the card insertion is checked (it returns to ** and 107), and the above registration actuation is repeated. In ending registration, a register mode setting-out means is operated, register mode is canceled (**, 115), and it completes register operation. In addition, the ID code written in the card is displayed on the display 24 of the card telephone terminal 20 between this register operation, and a user can keep this ID code in mind. In this way, if registration is

completed, a telephone user can do budget setting out by considering phonecall charges as advance payment in a card budget setting device at arbitration using the card. This budget configuration procedure and actuation of each equipment in that case are explained below, referring to drawing 4. First, the telephone user who is going to do budget setting out inserts the registered card in the card reader section 33 of the card budget setting device 30. The card budget setting device 30 will read the ID code of a card in the card reader section 33, if it detects that the card was inserted (drawing 4, 201) (**, 202). And the read ID code is transmitted to the main unit 10 through the data communication line 4 from the data communication circuit 31 (**, 203). The main unit 10 receives this ID code in the data communication circuit 14 (**, 204), and searches this ID code all over ID code area of a store circuit 15 (**, 205). And it judges whether the same ID code is registered (**, 206), when the same ID code does not exist, error processing is carried out as un-registering (**, 207), and it ends. In this case, as an error which is not registered [this], the message of the purport which has not been registered, for example is displayed on the card budget setting device 30 from the main unit 10, an error message — "it has not registered" — is displayed on the display 34 of delivery and the card budget setting device 30, and return processing etc. carries out a card. On the other hand, if the ID code is registered with the main unit 10 and it will distinguish, the budget tariff information corresponding to the ID code with which the tariff information area of a store circuit 15 was read the account of a top will be read (**, 208). When budget setting out is the first, the price of the budget tariff information at this time is 0 yen. Moreover, if it is 2nd henceforth, it is the balance which deducted the utilization tariff by activity phonecall charges and the automatic-vending-machine terminal 40 from the tariff paid in advance so that it might mention later. In this way, the main unit 10 transmits the read budget tariff information to the card budget setting device 30 (**, 209). The card budget setting device 30 receives this budget tariff information (**, 210), and displays the budget tariff balance on a display 34 (**, 211). Then, a bill charge message, such as "please throw in a bill", is displayed on a display 34 (**, 212). In the bill discernment section 32, since this message is seen and a budget configurator throws in a bill, when a bill is not able to be identified and (**, 213) identified, the card budget setting device 30 returns a bill to bill return opening (**, 214), returns to a procedure 212, and redo of the charge of a bill is urged to it. when the thrown-in bill is discriminable, the charge amount of money is identified and the information on the charge amount of money is transmitted to the main unit 10 (said — 215). The main unit 10 receives this charge amount-of-money information (**, 216), and rewrites the tariff information area corresponding to said ID code to the budget tariff information on the new balance which consists of [the sum of the old budget tariff balance and the charge amount of money] (**, 217). And the main unit 10 transmits this new tariff information on the balance to the card budget setting device 30 (**, 218). The card budget setting device 30 receives the budget tariff information on this new balance (**, 219), and displays that new balance on a display 34 (**, 220). Next, if it judges whether the card budget setting device 30 has addition of a bill (**, 221) and there is an addition, the rewriting procedure to the above new balances of return and budget tariff information will be repeated for a procedure 213, and will be carried out to it. When it is judged that he has no additional bill, it is judged by whether it passed whether the setting-out termination carbon button of the key input section 35 was pushed, and beyond fixed time amount whether it is setting-out termination (**, 222), and if it is not termination, return and the same procedure will be repeated for a procedure 221. Moreover, if it is setting-out termination, a bill will be stored in a safe 38 (**, 223), and termination information will be transmitted to the main unit 10 (**, 224). The main unit 10 receives this and returns the information on a termination check to the card budget setting device 30 (**, 225). The card budget setting device 30 receives the information on this check (**, 226), it publishes the receipt to the charge amount of money from PURITA 36 while it returns a card (**, 227) (**, 228), and it ends a budget configuration procedure. The check of an ID code can be performed by displaying the ID code currently written in the card also at the time of the above budget setting out on the display 34. Next, the procedure of dispatch of the telephone user using a card is explained, referring to the flow chart of drawing 5. When the automatic-vending-machine terminal 40 is used, it mentions later. First, the telephone user who

is going to send inserts a card in the card telephone terminal 20. If the card telephone terminal 20 detects insertion of a card (drawing 5, 301), the ID code of a card will be read in the card reader section 23 (**, 302). And the read ID code is transmitted to the main unit 10 through a data bus 3 (**, 303). The main unit 10 receives this ID code in the data communication circuit 13 (**, 304), and searches this ID code all over ID code area of a store circuit 15 (**, 305). And it judges whether the same ID code is registered (**, 306), when the same ID code does not exist, error processing is carried out as un-registering (**, 307), and it ends. In this case, as error processing which is not registered [this], it is the same as that of the time of the above-mentioned card budget configuration procedure, and is good. On the other hand, if it judges that the ID code is registered with the main unit 10, the budget tariff information corresponding to the ID code with which the tariff information area of a store circuit 15 was read will be read (**, 308). And from this budget tariff information, when the main unit 10 judges the existence of a budget (**, 309) and does not have a budget, a message to that effect is transmitted to the card telephone terminal 20 (**, 310). The card telephone terminal 20 returns a card (**, 312), and is ended while it receives this (**, 311) and displays a message without a budget on a display 24. When there is the budget balance, the main unit 10 performs main wire connection processing to the card telephone terminal 20 (**, 313). And budget tariff information is transmitted to the card telephone terminal 20 through a data bus 3 from the main unit 10 (**, 314). The card telephone terminal 20 receives this budget tariff information, and displays that amount of money on (**, 315), and a display 24 (**, 316). Next, if line wire dispatch with the card telephone terminal 20 is checked (**, 317), the main unit 10 will check the other party's response further, and will start accounting of phonecall charges by the accounting management circuit 16 (**, 318). And according to the hour entry of one frequency from the accounting management circuit 16, the main unit 10 measures the activity of one frequency (**, 319). And if there is an activity of one frequency, one frequency (10 yen) will be subtracted from the amount of money of the budget tariff information on the tariff information area corresponding to said searched ID code of a store circuit 15, and the budget tariff information on tariff area that a store circuit 15 corresponds by the subtraction result will be rewritten (**, 320). And the new balance information on this subtraction result is transmitted to the card telephone terminal 20 from the main unit 10 (**, 321). The card telephone terminal 20 receives this new balance information (**, 322), and changes the display of a display 24 into this new balance. And when judging whether it became clear back, for example by detection of the condition of a hook switch (**, 333) and having not become clear back, abatement of return and the budget balance amount of money for every frequency thru/or display modification to a display 24 are repeated by the procedure 319 to clear back. When judged as clear back, the clear back processing 10, i.e., the main unit, performs for example, main wire disconnection and an accounting halt (**, 324). When ***** of tariff area is collated after clear back processing and the budget tariff information on tariff (**, 325) area is subtracted, that is remembered that the main unit 10 stops the main wire dispatch by the card of the same code as corresponding ID code area in the operation regulation area of this store circuit 15 (**, 326). Moreover, the card telephone terminal 20 performs return of a card, after indicating to fixed time amount and a display 24 by the balance (**, 325). Next, if the actuation when using the automatic-vending-machine terminal 40 is explained, actuation until a user inserts a card in the automatic-vending-machine terminal 40, reading appearance of the budget tariff information corresponding to the ID code of this card is carried out by this with the main unit 10 and it is transmitted to the automatic-vending-machine terminal 40 is the same as the above-mentioned (explanation to 301-314 of drawing 5). Moreover, this budget tariff information is displayed by the display 44. Next, if the case where the user operated the automatic-vending-machine terminal 40, and uses this is explained, the automatic-vending-machine terminal 40 sends out the utilization amount of money at that time to the control circuit 17 of the main unit 10 with an ID code through the data communication circuit 41 from the tariff subtraction information-sending section 45. By this, a control circuit 17 subtracts the above-mentioned utilization amount of money from the amount of money of the budget tariff information on the tariff information area corresponding to the ID code of a store circuit 15, and rewrites the above-mentioned budget tariff information. And the new balance information on this subtraction

result is transmitted to the automatic-vending-machine terminal 40 from the main unit 10. The automatic-vending-machine terminal 40 receives this new balance information, and changes a display 44 into this new balance. Although the main unit 10 operates [whether although the new balance is memorized after activity termination of the above-mentioned automatic-vending-machine terminal 40, regulation processing is performed to next utilization, and], it is the same as that of the above-mentioned about this. The automatic-vending-machine terminal 40 performs return of a card, after indicating to fixed time amount and a display 44 by the balance. Although it is necessary to distribute the card which wrote in the ID code beforehand to a user, and to carry out registration for an ID code in the above example using a card, an ID code is published automatically as follows, it registers, and registration can be omitted. That is, as shown in drawing 6 in the case of this example, the card issuance section 39 is formed in the card budget setting device 30. Although it is completely the same as that of the main unit 10 and the example of drawing 1, it is not necessary to prepare the registration dedicated terminal of the ID code which established the register mode setting-out means especially as a card telephone terminal 20. As for a user, in the case of this example, card new purchase and supplementary budget setting out carries out key input actuation by the key input section 35 first with the card budget setting device 30. In new purchase, the bill of budget amount is thrown in. Then, in the bill discernment section 32, a bill is identified like the above-mentioned and the charge amount of money is calculated. Next, the card budget setting device 30 sends the identified charge amount-of-money information while sending the ID code of the card to publish to the main unit 10. in order to send this ID code to the main unit 10, the ID code is written in memory in order of card issuance, and reading appearance of this may be carried out with card issuance one by one, and you may make it read the ID code of the card to publish each time, although the ID code is written in the card to publish The main unit 10 receives these data, and in a store circuit 15, it writes charge amount-of-money information in the tariff information area corresponding to the memory location of the ID code as budget tariff information while writing an ID code in the ID code area. Completion of the writing to this store circuit 15 transmits an ID code and budget tariff information to the card budget setting device 30 from the main unit 10. The card budget setting device 30 receives this, and displays amount-of-money information on a display 34. If a user looks at the display amount of money, the amount of money is right and a confirmation button will be pushed, the card with which the ID code was written in will be published from the card issuance section 39. In this way, budget setting out can be simultaneously performed with registration of an ID code. Moreover, a card is also published. In this way, when the budget set up about the newly purchased card is lost or it decreases, in the card budget setting device 30, the card with which the supplementary budget setting-out key was written in push and an ID code is inserted. The subsequent procedure is completely the same as that of the budget configuration procedure shown in drawing 4 mentioned above. In addition, at the time of registration of an ID code, at the time of budget setting out, the ID code of a card is displayed on the telephone utilization time, the display 24, and display 34 in the card telephone terminal 20, and a card user can keep the ID code in mind. For this reason, by remaking the card which wrote in this remembered ID code, when a card user loses ****, utilization of a card user can be presented with the budget paid in advance, and relief of a card user is possible for it. Moreover, if it enables it to rewrite the ID code written in the store circuit 15, the unauthorized use by those who found the lost card can be prevented. In addition, since it is made to make tariff area have memorized to the main unit 10 when budget tariff information is minus, in case utilization of a card is stopped to it, "the bill of lack gold" can be outputted to it from a printer 36 by sending the information on "settlement of accounts" from the key input section 35 of the card budget setting device 30 at the main unit 10. Moreover, when there is the budget balance, a safe 38 is controlled and the balance can be returned in cash. A user may be made to set up an ID code by himself a condition [forbidding generating of an overlapping code by preparing further the function which writes an ID code in a card when preparing the card issuance section in a card budget setting device, although explained as that by which the ID code is beforehand written in the card in the above example in a card budget setting device].

[Effect of the Invention] According to this invention, the writing of a tariff and reading are not needed for a card that the ID code should just be written in. For this reason, the terminal of card telephone etc. can be constituted cheaply. Moreover, even if it loses a card, since it is possible to read the budget tariff information on a store circuit by reproducing the ID code of a card by a certain approach using this ID code, a user can secure the amount of money of the advance payment which carried out budget setting out, and it can perform relief of a user, such as keeping the ID code of a card in mind. Moreover, when the automatic vending machine of a card is prepared in a card budget setting device and it enables it to carry out automatic registration of an ID code to a sale of a card and coincidence, there is a merit of not needing operator intervention from registration to budget setting out.

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TECHNICAL FIELD

[Industrial Application] This invention relates to the card system tariff managerial system by the prepaid method.

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PRIOR ART

[Description of the Prior Art] The telephone card has spread widely as an object for coin box sets as a management method of the tariff using a card. As for the prepaid method by this telephone card, tariff information is written in the card itself. namely, a card — the read of tariff information and the means which can do writing are formed in the available coin box set, and when the tariff information currently written in the inserted card is read, that tariff information is subtracted according to duration of a call (frequency) and a call is completed with this read / write-in means at the time of an activity, he is trying to write the remaining tariff information in a card again

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EFFECT OF THE INVENTION

[Effect of the Invention] According to this invention, the writing of a tariff and reading are not needed for a card that the ID code should just be written in. For this reason, the terminal of card telephone etc. can be constituted cheaply. Moreover, even if it loses a card, since it is possible to read the budget tariff information on a store circuit by reproducing the ID code of a card by a certain approach using this ID code, a user can secure the amount of money of the advance payment which carried out budget setting out, and it can perform relief of a user, such as keeping the ID code of a card in mind. Moreover, when the automatic vending machine of a card is prepared in a card budget setting device and it enables it to carry out automatic registration of an ID code to a sale of a card and coincidence, there is a merit of not needing operator intervention from registration to budget setting out.

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TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] By the way, not only phonecall charges but various kinds of automatic vending machines etc. are made to share the tariff management by such prepaid method, for example, there is want of enabling it to want to be able to use in a hotel and an apartment. When it is going to apply the above-mentioned prepaid method to the system for meeting such want, there are the following problems.

That is, in order to have to write again the ***** information which subtracted the tariff which read the tariff information memorized by (1) card, and was used from the read tariff information in a card, reading / write-in function must be given to all the telephones of the terminal using a card, and automatic vending machines, and it will become expensive while terminal telephone and an automatic vending machine become complicated.

(2) It will be used improperly by forgery of a card etc., if it is come to hand by the terminal unit and reading / write-in method of the card which is the core are analyzed, since it has tariff information in the card itself and is the same property as a gold note. For this reason, telephone and an automatic vending machine must carry out a security function to the configuration fully taken into consideration, and cause a cost rise.

(3) A call will be interrupted if ***** becomes zero. (4) When a user loses a card, it loses simultaneously and tariff information does not have a relief means against a user, either. This invention tends to offer the card system tariff managerial system by the prepaid method which solved the above-mentioned trouble.

[Translation done.]

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MEANS

[Means for Solving the Problem] This invention is a card budget setting device and tariff management equipment connected with this card budget setting device by the data communication line. It consists of terminal units connected with this tariff management equipment by the data communication line. To the above-mentioned budget setting device A means to transmit the ID code of the tariff information corresponding to a card and its card to tariff management equipment through the above-mentioned data communication line is established. A storage means is formed in the above-mentioned tariff management equipment, and the ID code transmitted from the above-mentioned budget setting device and the tariff information corresponding to this ID code are memorized. To a terminal unit A means to transmit the information for subtracting the tariff information recorded on a reading means to read the ID code recorded on the card, and an ID code and the above-mentioned tariff management equipment. It is the card system tariff managerial system characterized by establishing a display means, and for tariff management equipment subtracting the tariff information in which storage is carried out [above-mentioned] by the above-mentioned subtraction information, and controlling the above-mentioned terminal unit according to a subtraction result.

[0005]

[work --] for At the time of budget setting out, the ID code corresponding to a card and budget amount-of-money information are transmitted to tariff management equipment from a budget setting device, it is matched with the storage means in tariff management equipment by the above-mentioned ID code and the ID code, and budget tariff information is memorized. At the time of the activity of terminal units, such as a card dialer and a card system automatic vending machine, according to an ID code and the utilization situation of this terminal unit, the subtraction information on a tariff is transmitted to tariff management equipment from a terminal unit, and the budget balance is subtracted. This activity of a terminal unit is performed the degree of capital. Since a terminal unit is controlled according to a subtraction result, actuation of a terminal unit is not promptly interrupted for zero for the balance (a call is interrupted). Since it is not necessary to write tariff information in a card, it is not necessary to prepare the writer section in a terminal unit. Moreover, since it is possible to read budget tariff information from a storage means by keeping the ID code of a card in mind using this ID card, relief of the card user in the case of card loss can be performed.

[Translation done.]

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EXAMPLE

[Example] Hereafter, I will explain the tariff managerial system by this invention, referring to drawing of an example. The card with which the ID code for discernment was written for example, in the magnetic target is used for this example. And utilization by the card is enabled by paying a tariff in advance beforehand, and carrying out budget setting out corresponding to that ID code, using this card, and using this card at the terminal of card telephone or an automatic vending machine. Drawing 1 shows one example which constituted this tariff managerial system in a key telephone set and one, and, for 10, as for a card telephone terminal and 40, the main unit and 20 are [an automatic-vending-machine terminal and 30] card budget setting devices. Two or more card telephone terminals 20 and automatic-vending-machine terminals 40 are connectable to the main unit 10. However, the call line mentioned later is not connected to the automatic-vending-machine terminal 40. The main unit 10 has a main wire circuit and the exchange section 11, the extension circuits 12a-12n of the number according to the number of the card telephone terminals 20, i.e., the number of extensions, data telecommunication lines 13 and 14, the store circuit 15, the accounting management circuit 16, and the control circuit 17 that controls these and that is equipped with a mass clo computer (Following CPU is called), for example. Moreover, the card telephone terminal 20 has the transmission-and-reception talk circuit which is not illustrated, the TETA communication circuit 21, a control unit 22, the card reader section 23, the display 24, and the control circuit 25 equipped with CPU which controls these. The automatic-vending-machine terminal 40 has the data communication circuit 41, a control unit 42, the card reader section 43 and a display 44, the tariff subtraction information-sending section 45, and the control circuit 46 equipped with CPU which controls these. The card budget setting device 30 has the data communication circuit 31, the bill discernment section 32, the card reader section 33, a display 34, the key input section 35, the printer 36, and the control circuit 37 equipped with CPU which controls these. The main unit 10 is connected with the telephone lines 1a-1m for 1 - a multiple-line, and these telephone lines 1a-1m are connected to a main wire circuit and the exchange section 11. Moreover, two or more extension call lines 2a-2n are connected to the main unit 10, and the extension circuits 12a-12n are connected between each, the main wire circuits, and the exchange sections 11 which are these extension call lines 2a-2n. And extension call lines [2a-2n] each is connected to the transmission-and-reception talk circuit of the card telephone terminal 20. The data communication circuit 13 of the main unit 10 is connected to each data communication circuit 21 and 41 of two or more card telephone terminals 20 and the automatic-vending-machine terminal 40 through the extension data bus 3. The data communication circuit 14 of the main unit 10 is connected to the data communication circuit 31 of the card budget setting device 30 through the data communication line 4. In the main unit 10, a main wire circuit and the exchange section 11 make connection (line wire call by main wire connection) between the telephone line and an extension call line, connection (extension call) of an extension call line comrade, etc. according to control of a control circuit 17. Extension circuits [12a-12n] each performs a call current supply source according to control of a control circuit 14. In the store circuit 15, as shown in drawing 2, ID code area and tariff information area are set up, the ID code currently written in the card is written in ID code area, and budget tariff information is written in tariff information area

corresponding to the ID code, respectively. About the writing to this store circuit 15, it mentions later. The accounting management circuit 16 has the tariff map on which the hour entry of one frequency which is the unit of phonecall charges is memorized according to the local office number and the street code, and is made to perform accounting management using a tariff map based on the control from a control circuit 17 at the time of a call. The tariff [management / of the automatic-vending-machine terminal 40 / utilization tariff] (for example, tariff computed from the number and unit price of an article which carried out the automatic sale) according to the utilization situation of the automatic-vending-machine terminal 40 is sent out to the main unit 10 from the tariff subtraction information-sending section 45, and tariff management is performed. Next, actuation is explained below. In the case of this example, the card with which a different ID code was written in, respectively is prepared. And this card is distributed to an individual's user. A user registers the ID code for utilization of the card telephone terminal 20 and the automatic-vending-machine terminal 40 first using this card. This register operation procedure and actuation of each equipment are explained referring to flow CHACHITO of drawing 3. In the case of this example, a register mode setting-out means for one in two or more card telephone terminals 20 to perform this registration actuation is formed in a control unit 22. First, a telephone user or an exclusive operator operates a register mode setting-out means at the card telephone terminal 20 with this register mode setting-out means, and makes it ID code register mode (drawing 3, 101). Then, the card telephone terminal 20 transmits mode setting information to the main unit 10 through a data bus 3 from the data communication circuit 21 (**, 102). The main unit 10 is the data communication circuit 13, receives this mode setting information (**, 103), and makes the mode of the main unit 10 the register mode of an ID code (**, 104). And the main unit 10 sends the acknowledgement message of having become register mode to the card telephone terminal 20 through a data bus 3 (**, 105). The card telephone terminal 20 receives this (**, 106), and displays a card insertion message, such as "please insert a card", on a display 24. Then, a telephone user or an operator inserts a card. And if card insertion is checked at the card telephone terminal 20 (**, 107), the card telephone terminal 20 will read the ID code written in the card by the card reader section 23 (**, 108), and will transmit the read ID code to the main unit 10 through a data bus 3 (**, 109). The main unit 10 receives this ID code (**, 110), and writes that ID code in a store circuit 15 (**, 111). In this case, as shown in drawing 2, an ID code is written in ID code area among memory areas. At this time, the content of storage of tariff information area is 0 yen. In this way, if registration of an ID code is completed, the main unit 10 will transmit a registration completion message to the card telephone terminal 20 through a data bus 3 (**, 112). The card telephone terminal 20 receives this message (**, 113). and — if it is [whether it registers by other telephone users continuing, and] ** about a means (**, 114) — the ** sake 24, for example, a display, — "— in registering continuously, please insert a card. In registration termination, please end register mode. Messages, such as ", are displayed. And since a card is inserted when performing repeat registration, the card insertion is checked (it returns to ** and 107), and the above registration actuation is repeated. In ending registration, a register mode setting-out means is operated, register mode is canceled (**, 115), and it completes register operation. In addition, the ID code written in the card is displayed on the display 24 of the card telephone terminal 20 between this register operation, and a user can keep this ID code in mind. In this way, if registration is completed, a telephone user can do budget setting out by considering phonecall charges as advance payment in a card budget setting device at arbitration using the card. This budget configuration procedure and actuation of each equipment in that case are explained below, referring to drawing 4. First, the telephone user who is going to do budget setting out inserts the registered card in the card reader section 33 of the card budget setting device 30. The card budget setting device 30 will read the ID code of a card in the card reader section 33, if it detects that the card was inserted (drawing 4, 201) (**, 202). And the read ID code is transmitted to the main unit 10 through the data communication line 4 from the data communication circuit 31 (**, 203). The main unit 10 receives this ID code in the data communication circuit 14 (**, 204), and searches this ID code all over ID code area of a store circuit 15 (**, 205). And it judges whether the same ID code is registered (**, 206), when the

same ID code does not exist, error processing is carried out as un-registering (**, 207), and it ends. In this case, as an error which is not registered [this], the message of the purport which has not been registered, for example is displayed on the card budget setting device 30 from the main unit 10, an error message — "it has not registered" — is displayed on the display 34 of delivery and the card budget setting device 30, and return processing etc. carries out a card. On the other hand, if the ID code is registered with the main unit 10 and it will distinguish, the budget tariff information corresponding to the ID code with which the tariff information area of a store circuit 15 was read the account of a top will be read (**, 208). When budget setting out is the first, the price of the budget tariff information at this time is 0 yen. Moreover, if it is 2nd henceforth, it is the balance which deducted the utilization tariff by activity phonecall charges and the automatic-vending-machine terminal 40 from the tariff paid in advance so that it might mention later. In this way, the main unit 10 transmits the read budget tariff information to the card budget setting device 30 (**, 209). The card budget setting device 30 receives this budget tariff information (**, 210), and displays the budget tariff balance on a display 34 (**, 211). Then, a bill charge message, such as "please throw in a bill", is displayed on a display 34 (**, 212). In the bill discernment section 32, since this message is seen and a budget configurator throws in a bill, when a bill is not able to be identified and (**, 213) identified, the card budget setting device 30 returns a bill to bill return opening (**, 214), returns to a procedure 212, and redo of the charge of a bill is urged to it. when the thrown-in bill is discriminable, the charge amount of money is identified and the information on the charge amount of money is transmitted to the main unit 10 (said — 215). The main unit 10 receives this charge amount-of-money information (**, 216), and rewrites the tariff information area corresponding to said ID code to the budget tariff information on the new balance which consists of [the sum of the old budget tariff balance and the charge amount of money] (**, 217). And the main unit 10 transmits this new tariff information on the balance to the card budget setting device 30 (**, 218). The card budget setting device 30 receives the budget tariff information on this new balance (**, 219), and displays that new balance on a display 34 (**, 220). Next, if it judges whether the card budget setting device 30 has addition of a bill (**, 221) and there is an addition, the rewriting procedure to the above new balances of return and budget tariff information will be repeated for a procedure 213, and will be carried out to it. When it is judged that he has no additional bill, it is judged by whether it passed whether the setting-out termination carbon button of the key input section 35 was pushed, and beyond fixed time amount whether it is setting-out termination (**, 222), and if it is not termination, return and the same procedure will be repeated for a procedure 221. Moreover, if it is setting-out termination, a bill will be stored in a safe 38 (**, 223), and termination information will be transmitted to the main unit 10 (**, 224). The main unit 10 receives this and returns the information on a termination check to the card budget setting device 30 (**, 225). The card budget setting device 30 receives the information on this check (**, 226), it publishes the receipt to the charge amount of money from PURITA 36 while it returns a card (**, 227) (**, 228), and it ends a budget configuration procedure. The check of an ID code can be performed by displaying the ID code currently written in the card also at the time of the above budget setting out on the display 34. Next, the procedure of dispatch of the telephone user using a card is explained, referring to the flow chart of drawing 5. When the automatic-vending-machine terminal 40 is used, it mentions later. First, the telephone user who is going to send inserts a card in the card telephone terminal 20. If the card telephone terminal 20 detects insertion of a card (drawing 5, 301), the ID code of a card will be read in the card reader section 23 (**, 302). And the read ID code is transmitted to the main unit 10 through a data bus 3 (**, 303). The main unit 10 receives this ID code in the data communication circuit 13 (**, 304), and searches this ID code all over ID code area of a store circuit 15 (**, 305). And it judges whether the same ID code is registered (**, 306), when the same ID code does not exist, error processing is carried out as un-registering (**, 307), and it ends. In this case, as error processing which is not registered [this], it is the same as that of the time of the above-mentioned card budget configuration procedure, and is good. On the other hand, if it judges that the ID code is registered with the main unit 10, the budget tariff information corresponding to the ID code with which the tariff information area of a store circuit 15 was read will be read (**,

308). And from this budget tariff information, when the main unit 10 judges the existence of a budget (**, 309) and does not have a budget, a message to that effect is transmitted to the card telephone terminal 20 (**, 310). The card telephone terminal 20 returns a card (**, 312), and is ended while it receives this (**, 311) and displays a message without a budget on a display 24. When there is the budget balance, the main unit 10 performs main wire connection processing to the card telephone terminal 20 (**, 313). And budget tariff information is transmitted to the card telephone terminal 20 through a data bus 3 from the main unit 10 (**, 314). The card telephone terminal 20 receives this budget tariff information, and displays that amount of money on (**, 315), and a display 24 (**, 316). Next, if line wire dispatch with the card telephone terminal 20 is checked (**, 317), the main unit 10 will check the other party's response further, and will start accounting of phonecall charges by the accounting management circuit 16 (**, 318). And according to the hour entry of one frequency from the accounting management circuit 16, the main unit 10 measures the activity of one frequency (**, 319). And if there is an activity of one frequency, one frequency (10 yen) will be subtracted from the amount of money of the budget tariff information on the tariff information area corresponding to said searched ID code of a store circuit 15, and the budget tariff information on tariff area that a store circuit 15 corresponds by the subtraction result will be rewritten (**, 320). And the new balance information on this subtraction result is transmitted to the card telephone terminal 20 from the main unit 10 (**, 321). The card telephone terminal 20 receives this new balance information (**, 322), and changes the display of a display 24 into this new balance. And when judging whether it became clear back, for example by detection of the condition of a hook switch (**, 333) and having not become clear back, abatement of return and the budget balance amount of money for every frequency thru/or display modification to a display 24 are repeated by the procedure 319 to clear back. When judged as clear back, the clear back processing 10, i.e., the main unit, performs for example, main wire disconnection and an accounting halt (**, 324). When ***** of tariff area is collated after clear back processing and the budget tariff information on tariff (**, 325) area is subtracted, that is remembered that the main unit 10 stops the main wire dispatch by the card of the same code as corresponding ID code area in the operation regulation area of this store circuit 15 (**, 326). Moreover, the card telephone terminal 20 performs return of a card, after indicating to fixed time amount and a display 24 by the balance (**, 325). Next, if the actuation when using the automatic-vending-machine terminal 40 is explained, actuation until a user inserts a card in the automatic-vending-machine terminal 40, reading appearance of the budget tariff information corresponding to the ID code of this card is carried out by this with the main unit 10 and it is transmitted to the automatic-vending-machine terminal 40 is the same as the above-mentioned (explanation to 301-314 of drawing 5). Moreover, this budget tariff information is displayed by the display 44. Next, if the case where the user operated the automatic-vending-machine terminal 40, and uses this is explained, the automatic-vending-machine terminal 40 sends out the utilization amount of money at that time to the control circuit 17 of the main unit 10 with an ID code through the data communication circuit 41 from the tariff subtraction information-sending section 45. By this, a control circuit 17 subtracts the above-mentioned utilization amount of money from the amount of money of the budget tariff information on the tariff information area corresponding to the ID code of a store circuit 15, and rewrites the above-mentioned budget tariff information. And the new balance information on this subtraction result is transmitted to the automatic-vending-machine terminal 40 from the main unit 10. The automatic-vending-machine terminal 40 receives this new balance information, and changes a display 44 into this new balance. Although the main unit 10 operates [whether although the new balance is memorized after activity termination of the above-mentioned automatic-vending-machine terminal 40, regulation processing is performed to next utilization, and], it is the same as that of the above-mentioned about this. The automatic-vending-machine terminal 40 performs return of a card, after indicating to fixed time amount and a display 44 by the balance. Although it is necessary to distribute the card which wrote in the ID code beforehand to a user, and to carry out registration for an ID code in the above example using a card, an ID code is published automatically as follows, it registers, and registration can be omitted. That is, as shown in drawing 6 in the case of this example, the card issuance section 39 is formed in the card

budget setting device 30. Although it is completely the same as that of the main unit 10 and the example of drawing 1, it is not necessary to prepare the registration dedicated terminal of the ID code which established the register mode setting-out means especially as a card telephone terminal 20. As for a user, in the case of this example, card new purchase and supplementary budget setting out carries out key input actuation by the key input section 35 first with the card budget setting device 30. In new purchase, the bill of budget amount is thrown in. Then, in the bill discernment section 32, a bill is identified like the above-mentioned and the charge amount of money is calculated. Next, the card budget setting device 30 sends the identified charge amount-of-money information while sending the ID code of the card to publish to the main unit 10. in order to send this ID code to the main unit 10, the ID code is written in memory in order of card issuance, and reading appearance of this may be carried out with card issuance one by one, and you may make it read the ID code of the card to publish each time, although the ID code is written in the card to publish. The main unit 10 receives these data, and in a store circuit 15, it writes charge amount-of-money information in the tariff information area corresponding to the memory location of the ID code as budget tariff information while writing an ID code in the ID code area. Completion of the writing to this store circuit 15 transmits an ID code and budget tariff information to the card budget setting device 30 from the main unit 10. The card budget setting device 30 receives this, and displays amount-of-money information on a display 34. If a user looks at the display amount of money, the amount of money is right and a confirmation button will be pushed, the card with which the ID code was written in will be published from the card issuance section 39. In this way, budget setting out can be simultaneously performed with registration of an ID code. Moreover, a card is also published. In this way, when the budget set up about the newly purchased card is lost or it decreases, in the card budget setting device 30, the card with which the supplementary budget setting-out key was written in push and an ID code is inserted. The subsequent procedure is completely the same as that of the budget configuration procedure shown in drawing 4 mentioned above. In addition, at the time of registration of an ID code, at the time of budget setting out, the ID code of a card is displayed on the telephone utilization time, the display 24, and display 34 in the card telephone terminal 20, and a card user can keep the ID code in mind. For this reason, by remaking the card which wrote in this remembered ID code, when a card user loses **-**, utilization of a card user can be presented with the budget paid in advance, and relief of a card user is possible for it. Moreover, if it enables it to rewrite the ID code written in the store circuit 15, the unauthorized use by those who found the lost card can be prevented. In addition, since it is made to make tariff area have memorized to the main unit 10 when budget tariff information is minus, in case utilization of a card is stopped to it, "the bill of lack gold" can be outputted to it from a printer 36 by sending the information on "settlement of accounts" from the key input section 35 of the card budget setting device 30 at the main unit 10. Moreover, when there is the budget balance, a safe 38 is controlled and the balance can be returned in cash. A user may be made to set up an ID code by himself a condition [forbidding generating of an overlapping code by preparing further the function which writes an ID code in a card when preparing the card issuance section in a card budget setting device, although explained as that by which the ID code is beforehand written in the card in the above example in a card budget setting device].

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] The block diagram showing one example of the card system tariff managerial system by this invention

[Drawing 2] Drawing showing the example of the content of storage of a store circuit

[Drawing 3] Flow chart

[Drawing 4] Flow chart

[Drawing 5] Flow chart

[Drawing 6] It is drawing showing an example of the important section of other examples of this invention.

[Description of Notations]

10 Main Unit

15 Store Circuit

16 Accounting Management Circuit

20 Card Telephone Terminal

23 33 Card reader section

24 34 Display

30 Card Budget Setting Device

40 Automatic-Vending-Machine Terminal

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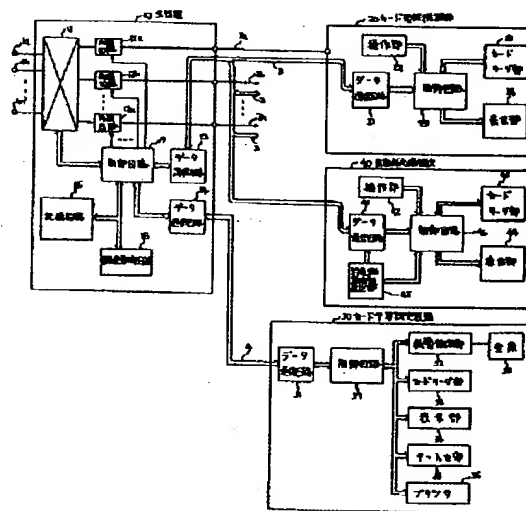
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(54) 【発明の名称】 カード式料金管理システム

(57) 【要約】

【目的】 プリペイド方式によるカード式料金管理システムにおいて、カード予算を各カードに対応させて主装置内に記憶させ、予算の残金情報に応じて、カードの ID コード読取時に端末装置の使用可否を制御し、予算の過不足が精算できるようにする。

【構成】 カード電話機及び自動販売機等から成る端末 20、40 及びカード予算設定装置 30 と、これらがデータ通信線で接続された主装置 10 とで構成され、カード予算はカード予算設定装置によって各カードに対応させて主装置 10 の記憶回路 15 に記憶させ、主装置 10 は端末 20、40 からの ID コード読取時に端末 20、40 の使用可否を制御するようにした。



【特許請求の範囲】

【請求項1】 カード予算設定装置と、このカード予算設定装置とデータ通信線で接続された料金管理装置と、この料金管理装置とデータ通信線で接続された端末装置とから構成され、上記予算設定装置には、カードに対応した料金情報とそのカードのIDコードを上記データ通信線を介して料金管理装置に送信する手段が設けられ、上記料金管理装置には記憶手段が設けられて、上記予算設定装置から送信されたIDコード及びこのIDコードに対応した料金情報が記憶され、端末装置には、カードに記録されたIDコードを読取る読取手段と、IDコード及び上記料金管理装置に記録された料金情報を減算するための情報を送信する手段と、上記料金情報等を表示する表示手段とが設けられ、料金管理装置は、上記減算情報により上記記憶されている料金情報を減算して記憶し、上記端末装置からIDコードが送信されたとき、該IDコードに対応する上記減算された記憶情報に応じて端末装置の使用を不可に制御するようにしたことを特徴とするカード式料金管理システム

【発明の詳細な説明】

【0001】

【産業上の利用分野】 この発明は、プリペイド方式によるカード式料金管理システムに関するものである。

【0002】

【従来の技術】 カードを利用した料金の管理方式としてテレホンカードが、公衆電話機用として広く普及している。このテレホンカードによるプリペイド方式は、カード自体に料金情報が書き込まれている。すなわち、カード利用可能な公衆電話機には、料金情報の読取り、書き込みができる手段が設けられており、使用時、この読取り／書き込み手段により、挿入されたカードに書き込まれている料金情報を読み取り、通話時間（度数）に応じて、その料金情報を減算し、通話が終了したときに、残りの料金情報を再度カードに書き込むようにしている。

【0003】

【発明が解決しようとする問題点】 ところで、このようなプリペイド方式による料金管理を通話料金だけでなく、各種の自動販売機等に共用させて例えばホテル内及びマンション内で利用できるようにしたいという要望がある。このような要望に応えるためのシステムに上記プリペイド方式を適用しようとすると次のような問題がある。

すなわち、(1) カードに記憶されている料金情報を読み取り、また、その読み取った料金情報から使用した料金を減算した残料金情報をカードに再度書き込まなければならないため、カードを利用する端末の電話機及び自動販売機の全てに、読み取り／書き込み機能を付与しなければならない、端末電話機及び自動販売機が複雑となるとともに高価になってしまう。

(2) カード自体に料金情報を持っているため金券と同

じ性質であることから、端末装置を入手され、その心臓部であるカードの読み取り／書き込み方式を解析されてしまうと、カードの偽造等により、不正使用されてしまう。このため、電話機及び自動販売機はセキュリティ機能を十分に考慮した構成にしなければならず、コストアップの要因になる。

(3) 残料金が零になると通話が中断される。(4) 利用者がカードを紛失してしまうと、料金情報も同時に紛失してしまい、利用者に対する救済手段がない。この発明は、上記の問題点を解決したプリペイド方式によるカード式料金管理システムを提供しようとするものである。

【0004】

【問題点を解決するための手段】 この発明は、カード予算設定装置と、このカード予算設定装置とデータ通信線で接続された料金管理装置と、この料金管理装置とデータ通信線で接続された端末装置とから構成され、上記予算設定装置には、カードに対応した料金情報とそのカードのIDコードを上記データ通信線を介して料金管理装置に送信する手段が設けられ、上記料金管理装置には記憶手段が設けられて、上記予算設定装置から送信されたIDコード及びこのIDコードに対応した料金情報が記憶され、端末装置には、カードに記録されたIDコードを読取る読取手段と、IDコード及び上記料金管理装置に記録された料金情報を減算するための情報を送信する手段と、表示手段とが設けられ、料金管理装置は、上記減算情報により上記記憶されている料金情報を減算するようにし、減算結果に応じて上記端末装置を制御するようにしたことを特徴とするカード式料金管理システムである。

【0005】

【作用】 予算設定時は、予算設定装置からカードに対応するIDコードと、予算金額情報が料金管理装置に送信され、料金管理装置内の記憶手段に上記IDコードと、IDコードに対応付けられて予算料金情報が記憶される。カード式電話機及びカード式自動販売機等の端末装置の使用時には、端末装置からIDコードと、該端末装置の利用状況に応じて、料金の減算情報が料金管理装置に送信され、予算残高が減算される。これが端末装置の使用の都度行なわれる。減算結果に応じて端末装置が制御されるので、残高が零で直ちに端末装置の動作が中断（例えば通話が中断）されることはない。カードには料金情報を書き込む必要はないので端末装置にライター部を設けなくてもよい。また、カードのIDコードを覚えておくことにより、このIDカードを用いて、記憶手段から予算料金情報を読み出すことが可能であるので、カード紛失の際のカード利用者の救済ができる。

【0006】

【実施例】 以下、この発明による料金管理システムを実施例の図を参照しながら説明しよう。この例は、識別用

のIDコードが例えば磁気的に書き込まれたカードを用いる。そして、このカードを用いて、そのIDコードに対応して料金を予め前払いして予算設定しておき、また、このカードをカード電話機または自動販売機等の端末で使用する事で、カードによる利用を可能にするものである。第1図は、この料金管理システムをボタン電話装置と一体に構成した一実施例を示し、10は主装置、20はカード電話機端末、40は自動販売機端末、30はカード予算設定装置である。カード電話機端末20及び自動販売機端末40は、主装置10に対して、複数個、接続可能である。ただし、自動販売機端末40には後述する通話線は接続されない。主装置10は、局線回路及び交換部11と、カード電話機端末20の数、すなわち内線数に応じた数の内線回路12a~12nと、データ通信回線13及び14と、記憶回路15と、課金管理回路16と、これらを制御する例えばマイクロコンピュータ（以下CPUと称す）を備える制御回路17とを有している。また、カード電話機端末20は、図示しない送受話回路と、データ通信回路21と、操作部22と、カードリーダ部23と、表示部24と、これらを制御するCPUを備える制御回路25とを有している。自動販売機端末40はデータ通信回路41と操作部42と、カードリーダ部43と表示部44と、料金減算情報送出部45と、これらを制御するCPUを備える制御回路46とを有している。カード予算設定装置30は、データ通信回路31と、紙幣識別部32と、カードリーダ部33と、表示部34と、キー入力部35と、プリンタ36と、これらを制御するCPUを備える制御回路37とを有している。主装置10は、1~複数回線分の電話回線1a~1mと接続され、これら電話回線1a~1mは、局線回路及び交換部11に接続されている。また、主装置10には複数本の内線通話線2a~2nが接続され、これら内線通話線2a~2nのそれぞれと局線回路及び交換部11との間に内線回路12a~12nが接続されている。そして、内線通話線2a~2nのそれぞれがカード電話機端末20の送受話回路に接続される。主装置10のデータ通信回路13は、内線データバス3を介して、複数のカード電話機端末20及び自動販売機端末40のそれぞれのデータ通信回路21および41に接続される。主装置10のデータ通信回路14は、データ通信線4を介して、カード予算設定装置30のデータ通信回路31に接続される。主装置10において、局線回路及び交換部11は、制御回路17の制御に従い、電話回線と内線通話線との接続（局線接続による外線通話）、内線通話線同志の接続（内線通話）などを行なう。内線回路12a~12nのそれぞれは制御回路14の制御に従い、通話電流供給を行なう。記憶回路15には、第2図に示すように、IDコードエリアと、料金情報エリアとが設定され、IDコードエリアには、カードに書き込まれているIDコードが書き込まれ、料金情

報エリアには、それぞれIDコードに対応して、予算料金情報が書き込まれている。この記憶回路15への書き込みについては後述する。課金管理回路16は、通話料金の単位である1度数の時間情報が市内局番及び市街局番に応じて記憶されている料金マップを有し、通話時に、制御回路17からの制御に基づいて、料金マップを用いて課金管理を行なうようにする。自動販売機端末40の利用料金管理は、自動販売機端末40の利用状況に応じた料金（例えば自動販売した物品の数及び単価から算出される料金）が、料金減算情報送出部45から主装置10に送出されて料金管理が行なわれる。次に動作について以下説明する。この例の場合、異なるIDコードがそれぞれ書き込まれたカードが用意される。そして、各個人の利用者にこのカードを配布する。利用者は、このカードを用いて、先ず、カード電話機端末20及び自動販売機端末40の利用のためのIDコードの登録を行なう。この登録操作手順及び各装置の動作について、第3図のフローチャートを参照しながら説明する。この例の場合、複数のカード電話機端末20のうちの1台は、この登録動作を行なうための登録モード設定手段が、例えば操作部22に設けられる。電話利用者あるいは専用オペレータは、先ず、この登録モード設定手段付きのカード電話機端末20で登録モード設定手段を操作して、IDコード登録モードにする（第3図、101）。すると、そのカード電話機端末20は、データ通信回路21よりデータバス3を介して、主装置10にモード設定情報を電送する（同、102）。主装置10は、データ通信回路13で、このモード設定情報を受け（同、103）、主装置10のモードを、IDコードの登録モードとする（同、104）。そして、主装置10は、登録モードになったことの確認メッセージをデータバス3を介してカード電話機端末20に送る（同、105）。カード電話機端末20は、これを受け（同、106）、表示部24に、例えば「カードを挿入してください」等のカード挿入メッセージを表示する。そこで、電話利用者あるいはオペレータは、カードを挿入する。そして、カード挿入がカード電話機端末20で確認されると（同、107）、カード電話機端末20はカードに書き込まれたIDコードを、カードリーダ部23により読み取り（同、108）、その読み取ったIDコードを、データバス3を介して、主装置10に伝送する（同、109）。主装置10はこのIDコードを受信し（同、110）、記憶回路15に、そのIDコードを書き込む（同、111）。この場合、第2図に示すように、IDコードは、メモリエリアのうち、IDコードエリアに書き込まれる。このとき、料金情報エリアの記憶内容は0円となっている。こうして、IDコードの登録を完了すると、主装置10は、登録完了メッセージをカード電話機端末20にデータバス3を通じて伝送する（同、112）。カード電話機端末20は、このメッセージを受信

する(同、113)。そして、他の電話利用者が続いて登録を行なうか否か(同、114)により、手段を異ならすため、例えば表示部24に、「連続して登録を行なう場合にはカードを挿入して下さい。登録終了の場合は、登録モードを終了して下さい。」等のメッセージを表示する。そして、連続登録を行なう場合には、カードが挿入されるので、そのカード挿入を確認して(同、107に戻る)、以上の登録動作を繰り返す。登録を終了する場合には、登録モード設定手段を操作して、登録モードを解除し(同、115)、登録操作が完了する。なお、この登録操作の間、カード電話機端末20の表示部24には、カードに書き込まれたIDコードが表示されており、利用者は、このIDコードを覚えておくことができる。こうして、登録が完了すると、電話利用者は、そのカードを用いてカード予算設定装置において、任意に通話料金を前払いとして、予算設定ができる。この予算設定手順及びその際の各装置の動作を第4図を参照しながら以下に説明する。まず、予算設定しようとする電話利用者は、登録したカードをカード予算設定装置30のカードリーダ部33に挿入する。カード予算設定装置30は、カードが挿入されたことを検知したら(第4図、201)、カードリーダ部33でカードのIDコードを読み取る(同、202)。そして、読み取ったIDコードをデータ通信回路31よりデータ通信線4を通じて主装置10に伝送する(同、203)。主装置10は、このIDコードをデータ通信回路14で受信し(同、204)、このIDコードを記憶回路15のIDコードエリア中において検索する(同、205)。そして、同一のIDコードが登録されているか否か判断し(同、206)、同一のIDコードが存在していないときは未登録としてエラー処理し(同、207)、終了する。この場合、この未登録のエラーとしては、例えば未登録である旨のメッセージを、主装置10からカード予算設定装置30に送り、カード予算設定装置30の表示部34に、「未登録です」等のエラーメッセージを表示し、カードを返却処理等する。一方、主装置10でIDコードが登録されていると判別すると、記憶回路15の料金情報エリアの、上記読み取られたIDコードに対応する予算料金情報を読み出す(同、208)。このときの予算料金情報は、予算設定が初めての場合には、0円であり、また、2回目以降であれば、後述するように前納した料金から使用通話料及び自動販売機端末40による利用料金を差し引いた残高である。こうして読み出した予算料金情報を、主装置10はカード予算設定装置30に送信する(同、209)。カード予算設定装置30は、この予算料金情報を受信し(同、210)、表示部34に、予算料金残高を表示する(同、211)。続いて、表示部34に「紙幣を投入して下さい」等の紙幣投入メッセージを表示する(同、212)。このメッセージを見て、予算設定者は紙幣を投入するので、カード予

算設定装置30は、紙幣識別部32において、紙幣を識別し(同、213)、識別できなかったときには、紙幣を紙幣返却口に戻し(同、214)、手順212に戻って紙幣の投入のやり直しを促す。投入された紙幣が識別できたときは、投入金額を識別して、その投入金額の情報を主装置10に送信する(同215)。主装置10は、この投入金額情報を受信し(同、216)、前記IDコードに対応した料金情報エリアを【今までの予算料金残高と投入金額との和】からなる新しい残高の予算料金情報に書き換える(同、217)。そして、この新しい残高の料金情報を、主装置10はカード予算設定装置30に送信する(同、218)。カード予算設定装置30は、この新残高の予算料金情報を受信し(同、219)、その新残高を表示部34に表示する(同、220)。次に、カード予算設定装置30は、紙幣の追加があるか否か判断し(同、221)、追加があれば手順213に戻り、予算料金情報の以上のような新残高への書き換え手順を、繰り返し行なう。追加紙幣なしと判断されたときは、キー入力部35の設定終了ボタンが押下されたか否か、あるいは一定時間以上経過したか否かにより、設定終了か否か判断され(同、222)、終了でなければ手順221に戻り、同じ手順を繰り返す。また、設定終了であれば、紙幣を金庫38に格納し(同、223)、終了情報を主装置10に伝送する(同、224)。主装置10は、これを受信し、終了確認の情報をカード予算設定装置30に送り返す(同、225)。カード予算設定装置30は、この確認の情報を受信し(同、226)、カードを返却(同、227)するとともに投入金額に対する領収書をブリタ36より発行して(同、228)、予算設定手順を終了する。以上の予算設定時にも、カードに書き込まれているIDコードを表示部34に表示しておくことにより、IDコードの確認ができる。次に、カードを用いた電話利用者の発信の手順について、第5図のフローチャートを参照しながら説明する。自動販売機端末40を用いた場合は後述する。まず、発信しようとする電話利用者は、カードをカード電話機端末20に挿入する。カード電話機端末20は、カードの挿入を検知したら(第5図、301)、カードリーダ部23でカードのIDコードを読み取る(同、302)。そして、その読み取ったIDコードを、データバス3を通じて、主装置10に送信する(同、303)。主装置10は、このIDコードをデータ通信回路13で受信し(同、304)、このIDコードを記憶回路15のIDコードエリア中において検索する(同、305)。そして、同一のIDコードが登録されているか否か判断し(同、306)、同一のIDコードが存在していないときは未登録としてエラー処理し(同、307)、終了する。この場合、この未登録のエラー処理としては、前述のカード予算設定手順の時と同様でよい。一方、主装置10でIDコードが登録されていると判断

すると、記憶回路15の料金情報エリアの読み取られたIDコードに対応する予算料金情報を読み出す(同、308)。そして、この予算料金情報から、主装置10は予算の有無を判断し(同、309)、予算が無いときは、その旨のメッセージをカード電話機端末20に送信する(同、310)。カード電話機端末20は、これを受信して(同、311)、予算無しのメッセージを表示部24に表示するとともに、カードを返却し(同、312)、終了となる。予算残高があるときは、主装置10は、カード電話機端末20に対する局線接続処理を行なう(同、313)。そして、主装置10からデータバス3を介して予算料金情報をカード電話機端末20に送信する(同、314)。カード電話機端末20は、この予算料金情報を受信し、(同、315)、表示部24にその金額を表示する(同、316)。次に、主装置10は、カード電話機端末20での外線発信を確認したら(同、317)、さらに相手方の応答を確認して通話料金の課金を、課金管理回路16によって開始する(同、318)。そして、課金管理回路16からの1度数の時間情報に従い、主装置10は、1度数の使用を計測する(同、319)。そして、1度数の使用があったら、記憶回路15の、前記検索したIDコードに対応した料金情報エリアの予算料金情報の金額から1度数(10円)を減算し、その減算結果により記憶回路15の対応する料金エリアの予算料金情報を書き換える(同、320)。そして、この減算結果の新残高情報は、主装置10からカード電話機端末20に送信する(同、321)。カード電話機端末20は、この新残高情報を受信し(同、322)、表示部24の表示をこの新残高に変更する。そして、例えばフックスイッチの状態の検出により終話となったか否かを判断し(同、323)、終話となっていないときは、手順319に戻り、1度数毎の予算残高金額の減額ないし表示部24への表示変更が終話まで繰り返される。終話と判断されたときは、終話処理すなわち、主装置10は例えば局線開放、課金停止を行なう(同、324)。終話処理後に料金エリアの予算残高を照合し、(同、325)料金エリアの予算料金情報がマイナスとなっている場合は、主装置10は対応するIDコードエリアと同一コードのカードによる局線発信を中止するように該記憶回路15の作用規制エリアにその旨を記憶する(同、326)。また、カード電話機端末20は、一定時間、表示部24に残高表示をした後、カードの返却を行なう(同、325)。次に自動販売機端末40を利用したときの動作を説明すると、利用者がカードを自動販売機端末40に挿入し、これによって、該カードのIDコードに対応する予算料金情報が主装置10で読み出され、それが、自動販売機端末40へ送信されるまでの動作は、前述(第5図の301~314までの説明)と同じである。また、この予算料金情報は表示部44によって表示される。次に利用者が、自動販売機

端末40を操作してこれを利用した場合を説明すると、自動販売機端末40はそのときの利用金額を料金減算情報送出部45からデータ通信回路41を介して主装置10の制御回路17にIDコードとともに送出する。これによって制御回路17は、記憶回路15のIDコードに対応した料金情報エリアの予算料金情報の金額から上記利用金額を減算し、上記予算料金情報を書き換える。そして、この減算結果の新残高情報は、主装置10から自動販売機端末40に送信される。自動販売機端末40は、この新残高情報を受信し、表示部44をこの新残高に変更する。主装置10は上記自動販売機端末40の使用終了後に新残高を記憶するが、次の利用に対して規制処理を行うか否かの動作を行うが、これについては前述と同様である。自動販売機端末40は、一定時間、表示部44に残高表示をした後、カードの返却を行なう。以上の例では、予めIDコードを書き込んだカードを利用者に配布し、カードを用いてIDコードを登録作業をする必要があるが、次のようにして自動的にIDコードを発行し、登録して、登録作業を省略できる。すなわち、この例の場合には、第6図に示すように、カード予算設定装置30には、カード発行部39が設けられる。主装置10、第1図例と全く同様であるが、カード電話機端末20としては、特に登録モード設定手段を設けたIDコードの登録専用端末を設ける必要はない。この例の場合、カード予算設定装置30で、利用者は、まず、キー入力部35により、カード新規購入か、追加予算設定がキー入力操作をする。新規購入の場合には、予算額の紙幣を投入する。すると、紙幣識別部32で、前述と同様にして紙幣を識別し、投入金額を計算する。次に、カード予算設定装置30は、発行するカードのIDコードを主装置10に送るとともに、識別した投入金額情報を送る。発行するカードにはIDコードが書き込まれているが、このIDコードを主装置10に送るには、カード発行順にメモリにIDコードを書き込んでおき、これを順次カード発行とともに読み出しても良いし、発行するカードのIDコードを、その都度、読み取るようにしても良い。主装置10は、これらのデータを受信し、記憶回路15において、IDコードは、そのIDコードエリアに書き込むとともに、投入金額情報は、そのIDコードのメモリ位置に対応した料金情報エリアに、予算料金情報として書き込む。この記憶回路15への書き込みが完了すると、IDコードと予算料金情報が主装置10からカード予算設定装置30に送信される。カード予算設定装置30は、これを受信し、金額情報を表示部34に表示する。利用者は、表示金額を見て、金額が正しければ、確認ボタンを押すと、IDコードが書き込まれたカードがカード発行部39から発行される。こうして、IDコードの登録と、予算設定が同時にできる。また、カードも発行される。こうして、新規購入したカードについて設定した予算が無くなる、あるいは少なくとも

ったときには、カード予算設定装置30において、追加予算設定キーを押し、IDコードが書き込まれたカードを挿入する。その後の手順は、前述した第4図に示した予算設定手順と全く同様である。なお、カード利用者は、IDコードの登録時、予算設定時、カード電話機端末20での電話利用時、表示部24及び表示部34にカードのIDコードが表示されており、そのIDコードを覚えておくことができる。このため、カード利用者が、カードを紛失したときは、この覚えていたIDコードを書き込んだカードを作り直すことにより、前払いした予算は、カード利用者の利用に供することができ、カード利用者の救済が可能である。また、記憶回路15に書き込まれたIDコードを書き直せるようにすれば、紛失したカードを拾得した者による不正使用を防止することができる。なお、主装置10には料金エリアに予算料金情報がマイナスの場合においても記憶させるようにしてあるので、カードの利用を中止する際に、カード予算設定装置30のキー入力部35から「精算」の情報を主装置10に送ることにより、「不足金の請求書」をプリンタ36から出力することができる。また、予算残金がある場合は、金庫38を制御して残金を現金で返却するようにすることができる。以上の例では、IDコードは、カードに予め書き込まれているものとして説明したが、カード予算設定装置にカード発行部を設ける場合において、カードにIDコードを書き込む機能を、さらに、カード予算設定装置に設けることにより、重複コードの発生を禁止することを条件として、利用者が自分でIDコードを設定するようにしてもよい。

【0007】

【発明の効果】この発明によれば、カードには、IDコ 30

ードが書き込まれていれば良く、料金の書き込み、読み取りを必要としない。このため、カード電話機等の端末は、安価に構成できる。また、カードを紛失したとしても、カードのIDコードを覚えておく等、カードのIDコードを何等かの方法で再現することにより、このIDコードを用いて記憶回路の予算料金情報を読み出すことが可能であるので、予算設定した前払いの金額は利用者が確保することができ、利用者の救済ができる。また、カードの自動販売機をカード予算設定装置に設け、カードの販売と同時にIDコードの自動登録をすることができるようにした場合には、登録から予算設定まで、オペレータの介在を必要としないというメリットがある。

【図面の簡単な説明】

【図1】本発明によるカード式料金管理システムの一実施例を示すブロック図

【図2】記憶回路の記憶内容の例を示す図

【図3】フローチャート

【図4】フローチャート

【図5】フローチャート

【図6】本発明の他の例の要部の一例を示す図である。

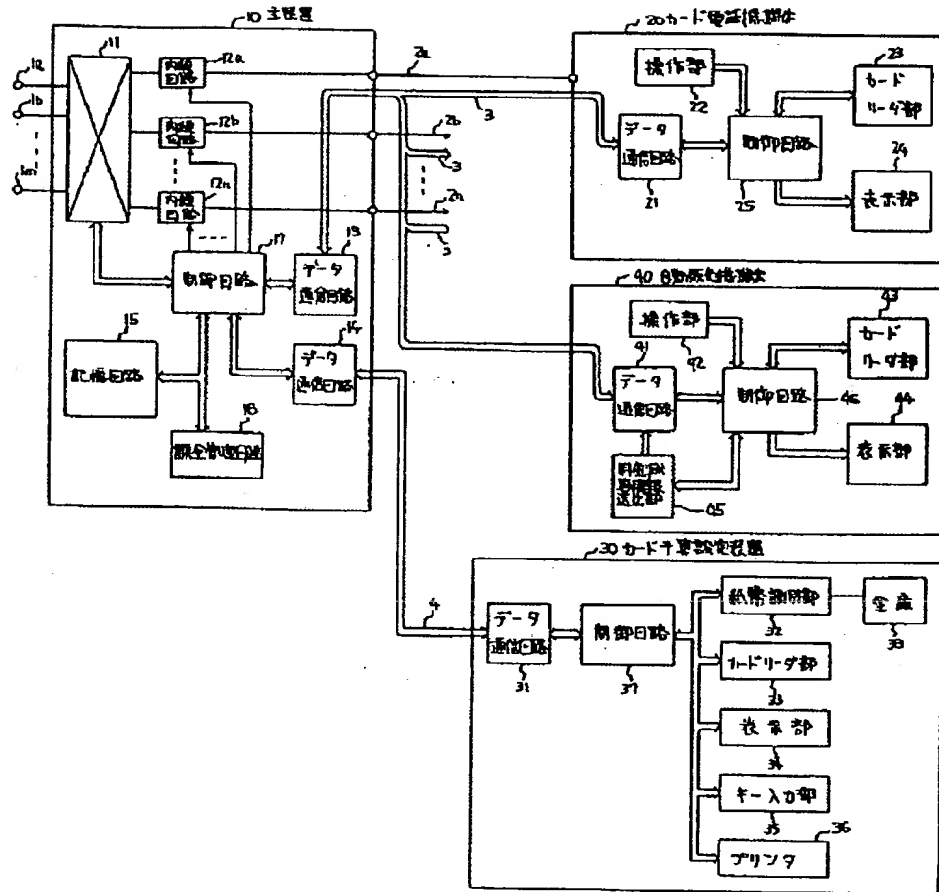
【符号の説明】

- 10 主装置
- 15 記憶回路
- 16 課金管理回路
- 20 カード電話機端末
- 23, 33 カードリーダ部
- 24, 34 表示部
- 30 カード予算設定装置
- 40 自動販売機端末

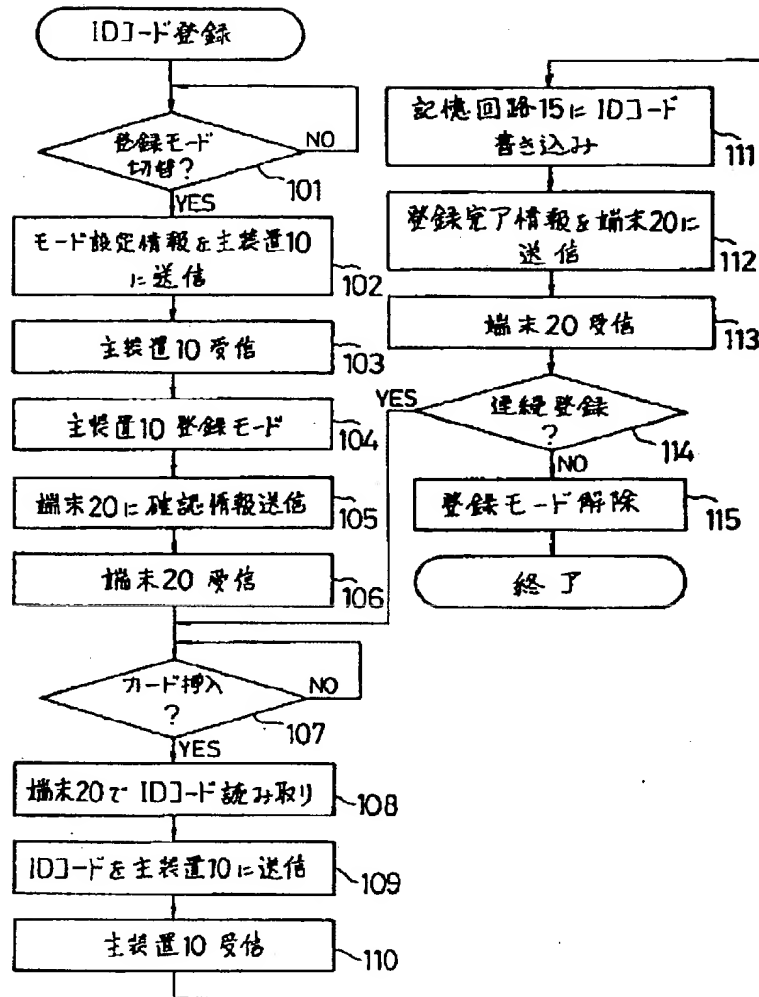
【図2】

IDコードエリア	料金情報エリア	使用規制エリア
100	3,000	○
101	1,000	○
102	- 590	×
⋮	⋮	⋮
⋮	⋮	⋮

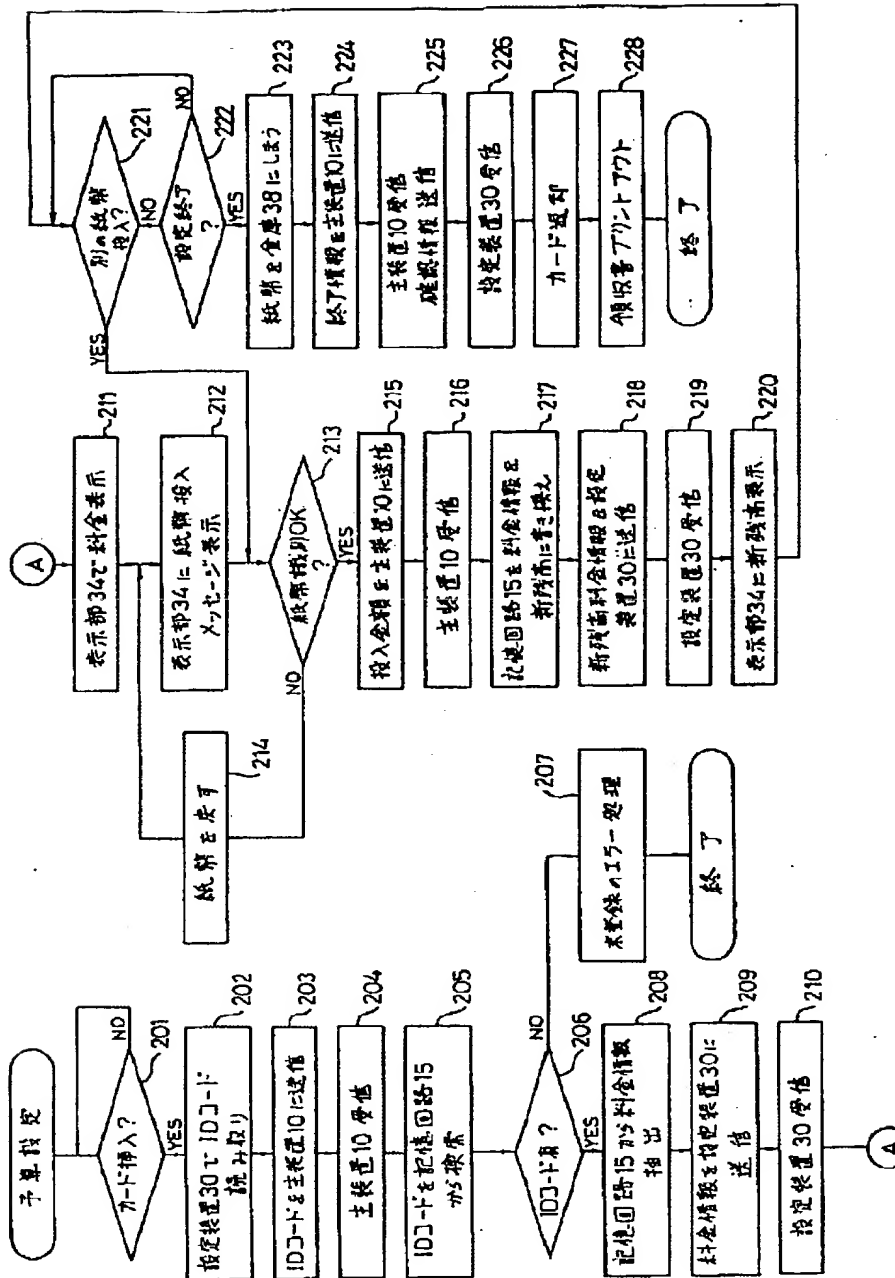
【図1】



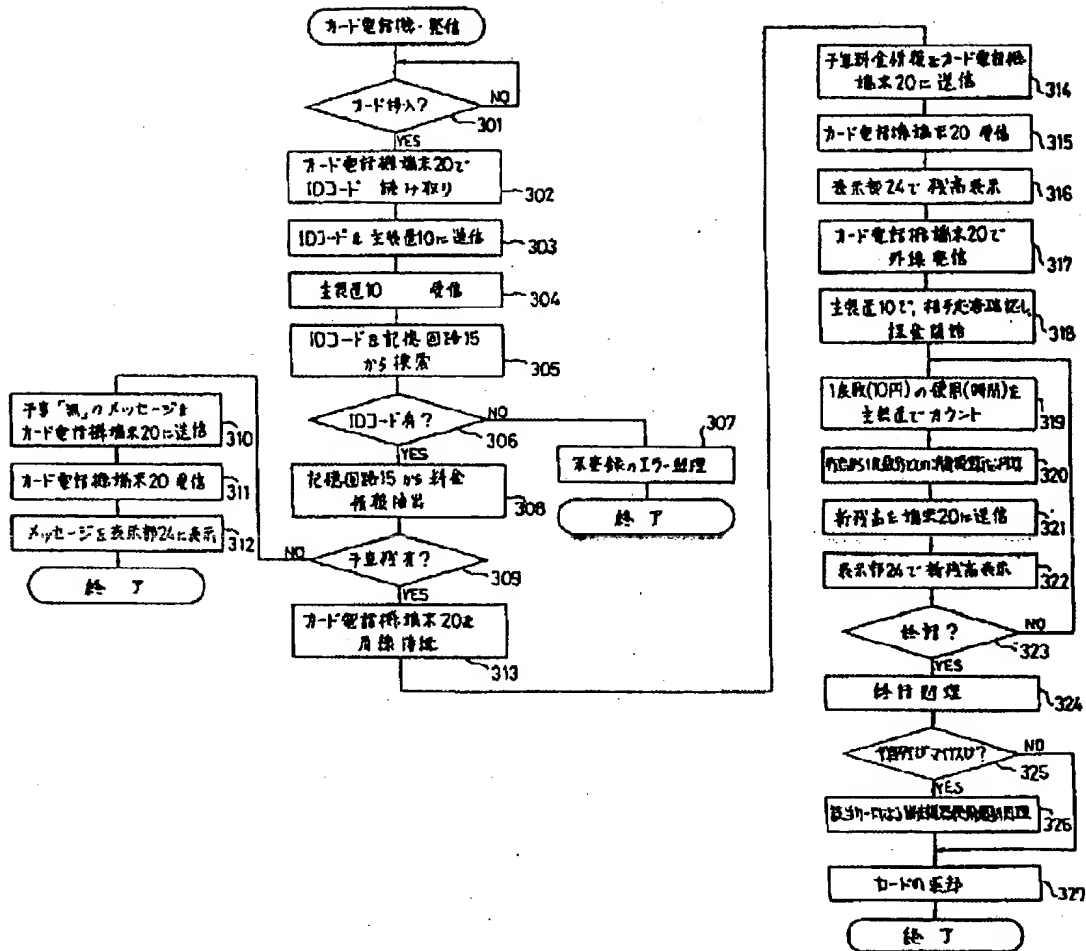
【図3】



[図4]



【図5】



【図6】

